**International Journal of Electronics, Communication & Instrumentation Engineering Research and Development (IJECIERD)**
**ISSN (P): 2249-684X; ISSN (E): 2249-7951**
**Vol. 9, Issue 1, Jun 2019, 43-46**


TRANS STELLAR
•Journal Publications •Research Consultancy

# PERFORMANCE ANALYSIS OF AD-HOC ROUTING PROTOCOLS

**DR. R. UMAMAHESWARI & M. RAMYA PRINCESS**

*Assistant Professor, Department of Electronics and Instrumentation Engineering,*

*SRM Valliammai Engineering College, Kattankulathur, Tamil Nadu, Chennai, India*

***ABSTRACT***

***An ad hoc mobile network has defined that collection of mobile nodes which are capable of changing on a continual basis that is dynamically and arbitrarily located. In order to enable service between the networks, a routing protocol is necessary. Ad hoc network routing protocol is an efficient route management protocol in this sector. This can be established in a timely manner. Routing can be done with a minimum of overhead and band width consumption. This paper proposes ad hoc routing protocol which evaluates in the ad hoc mobile network based on a given set of parameters. In this paper, we have discussed two protocols Destination-Sequenced Distance-Vector Routing protocol, Ad Hoc On-Demand Distance Vector (AODV) routing protocol comparison and discussion of both.***

***KEYWORDS: Ad-Hoc Routing Network, Destination-Sequenced Distance-Vector Routing Protocol & Ad Hoc On-Demand Distance Vector (AODV) Routing Protocol***

**Received**: Mar 18, 2019; **Accepted**: Apr 08, 2019; **Published**: Jun 19, 2019; **Paper Id.**: IJECIERDJUN20196

Original Article

## IINTRODUCTION

In the 1970s, Wireless Networks have become popular in the computing industry. During the past decade, wireless networks increasingly demand in wireless communication to enable mobility. Mostly wireless networks based on IEEE® 802.11 standards. A wireless network consists of multiple positions communicating with other stations using 2.4GHz or 5GHzband

There are two mobile wireless networks. One is infrastructure network which has a fixed and wired gateways. The bridges are called base stations. The mobile unit within these networks connect and communicate with the nearest station in a particular radius. The infrastructure network is used in wireless local area networks (WLANs). Another variant is infrastructure less mobile network also called as an ***ad hoc network***. These networks have fixed routers and can be connected dynamically in an arbitrary manner. Ad hoc networks are used in emergency search-and-rescue operations. This paper examines routing protocols designed for these ad hoc networks by describing the operation of each of the protocols.

## TYPES OF ROUTING PROTOCOL

### Destination-Sequenced Distance Vector Routing (DSDV) Protocol

The algorithm based on the classical Bellman-Ford routing mechanism. Every node maintains a table in which destinations and the number of hops to each destination is recorded. Every entry in the routing table is marked with a sequence number as mentioned in the destination node. The sequence numbers help to distinguish old routes from new ones. Routing tables are transmitted regularly throughout the network in order to maintain the network uniformity. An additional table which stores the data sent in incremental routing information packets in

mobile nodes. In some case, the new route contains the number of hops, address of the destination, the sequence number of the information received. The route updates the sequence number in order to enhance the path. The mobile network reduces traffic and eliminates those unwanted paths to obtain a better route.

**Ad Hoc on-Demand Distance Vector (AODV) Routing Protocol**

AODV protocol is a development form of DSDV algorithm. It minimizes the number of broadcast by creating routes on a demand basis. The broadcast ID is incremented for every node and together with the node's IP address, uniquely identifies an RREQ. Using sequence number and broadcast ID, the source node includes in the RREQ the most recent sequence number it has for the destination. Intermediate nodes can reply to the RREQ only if they have a route to the destination whose corresponding destination sequence number is greater than or equal to that contained in the RREQ.

## PERFORMANCE ANALYSIS

Under AODV Reverse path setup

Initially, Counters is taken as Sequence number, Broadcast id

- **Step 1:** Broadcast route request (RREQ) < source_addr1, source_sequence-#1, broadcast_id1, dest_addr1, dest_sequence_#1, hop count3
- **Step 2:** RREQ uniquely identified by <source_addr2, broadcast_id2
- **Step 3:** Route reply (RREP) if the neighbor is the target, or knows a higher dest_sequence_#2
- **Step 4:** Otherwise setup a pointer to the neighbor from whom RREQ was received
- **Step 5:** Maintain reverse path entries based on timeouts
- Under AODV forward path setup
- **Step 1:** RREQ arrives at a node that has a current route to the destination which has a Larger/same sequence number
- **Step 2:** Unicast request reply (RREP)<source_addr1, dest_addr1, dest_sequence_#1, hop_count4, lifetime to neighbor
- **Step 3:** RREP travels back to the source along the reverse path
- **Step 4:** Each upstream node updates dest_sequence_#, sets up a forward pointer to the neighbor who transmits the RREP
- **Step 5:** Local connectivity management, Broadcasts used to update local connectivity information, Inactive nodes in an *active* path required to send "hello" messages

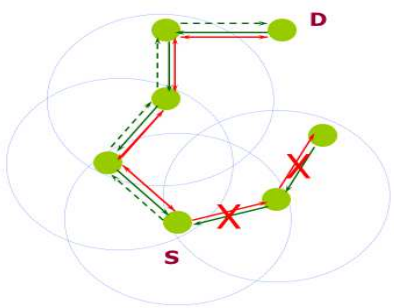


**Figure 1: Simulation Environment**

Using Network Simulator, 20, 30, 40, 50 nodes in a 1500x300m rectangular flat grid. Random waypoint mobility is suggested Constant bit rate traffic is used. Address resolution Protocol implementation in BSD UNIX. Medium Access Control: IEEE 802.11 Physical Layer model: combines both free space and two-ray ground reflection

## RESULTS AND DISCUSSIONS

Packet Delivery Ratio is the Ratio of number of packets generated by CBR sources to that received by CBR sinks at destination

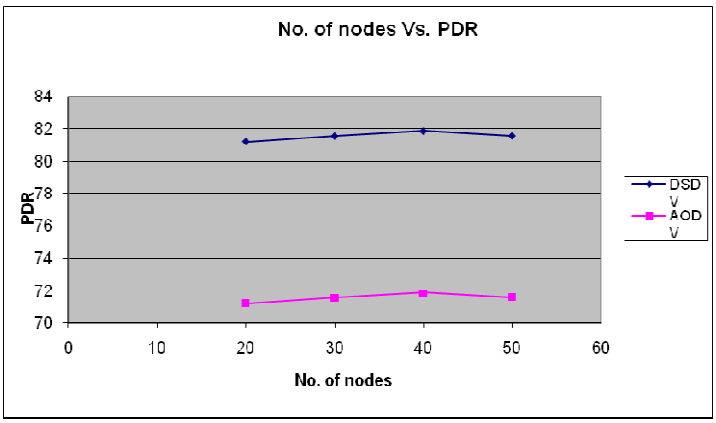


**Figure 2: No of Nodes Vs PDR**

Packet Routing Overhead is the number of routing packets sent; each transmission counts as one transmission.

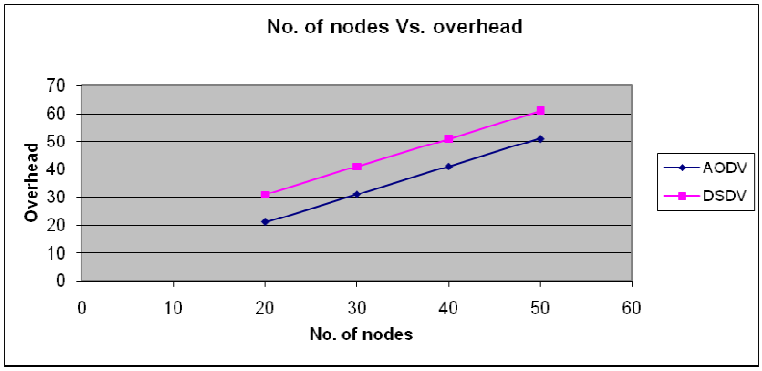


**Figure 3: No of Nodes Vs Overhead**

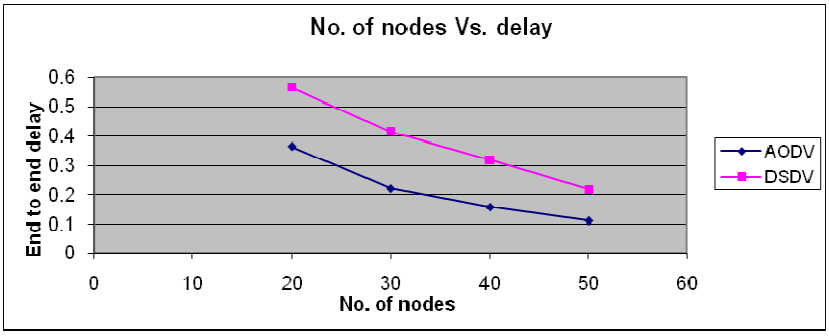


**Figure 4: No of Nodes Vs Delay**

## CONCLUSIONS

This paper does the truthful comparison of two protocols DSDV, AODV. The noteworthy observation is, simulation result agrees with the experimental. As expected, DSDV performance is best considering its ability to maintain connection by periodic exchange of Information, which is required by TCP-based traffic. In a similar manner, further protocols and parameters can be analyzed for ADHOC routing networks.

***REFERENCES***

1. *Boukerche A., "Performance Comparison and Analysis of Adhoc Routing Algorithms", IEEE International Conference on. Performance, Computing, and Communications, 2001, Apr 2001, pp. 171-178. 341.*
2. *Z.Alexander, "Performance Evaluation of AODV Routing Protocol: Real-Life Measurements", SCC,June 2003*
3. *Sundaramurthy, A., & Chitra, V. (2016). Big data gathering in wireless sensor network using hybrid dynamic energy routing protocol. BEST: International Journal of Management, Information Technology and Engineering (BEST: IJMITE), 4(4), 59-68.*
4. *Perkins,C.E., Bhagwat. P. (1994). "Highly Dynamic Destination-Sequenced Distance-Vector Routing (DSDV) for Mobile Computers". ACM, pp.234 –244.*
5. *Devapriya, M. (2018). Analyzing the Performance of Manet Routing Protocols Based on Evaluation of Different Parameters.*
6. *Park, S. Corson, "Temporally Ordered Routing Algorithm (TORA) Version 1", Functional specification IETF Internet draft, [Online] Available:http://www.ietf.org/internetdrafts/draft-ietf-manet-tora-spec-01.txt, 1998.*
7. *D. Johnson, "Dynamic Source Routing (DSR) for Mobile Adhoc Networks", IEFT MANET Draft, April 2003*
8. *[6] [Online] Available : http://www.isi.edu/nsnam/ns/nsdocumentation. html, April 2005*